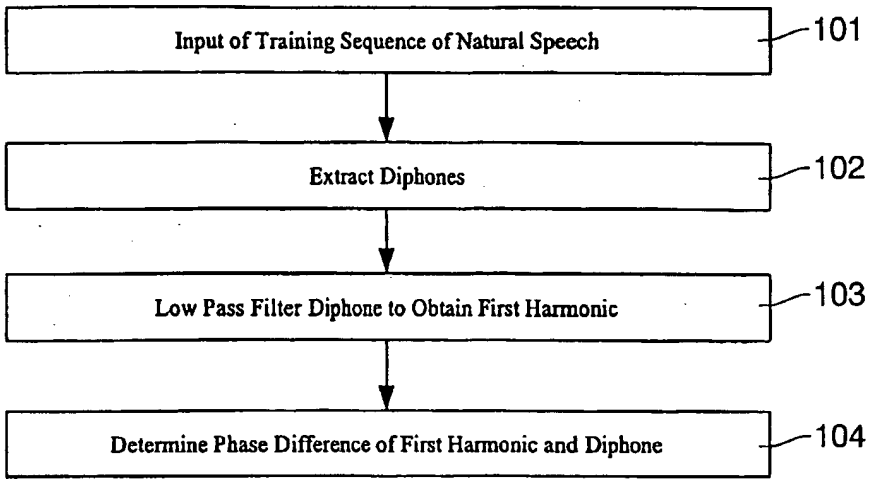
Input of Training Sequence of Natural Speech
101
Extract Diphones
102
Low Pass Filter Diphone to Obtain First Harmonic
103
Determine Phase Difference of First Harmonic and Diphone
104

FIG.1

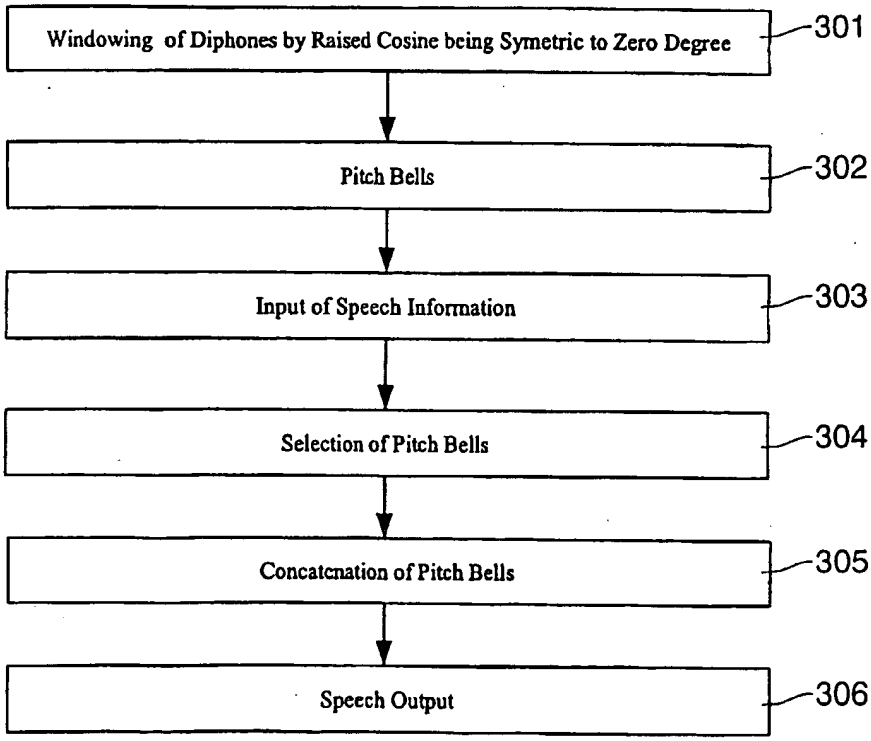
Windowing of Diphones by Raised Cosine being Symetric to Zero Degree
301
Pitch Bells
302
Input of Speech Information
303
Selection of Pitch Bells
304
Concatenation of Pitch Bells
305
Speech Output
306

FIG.3

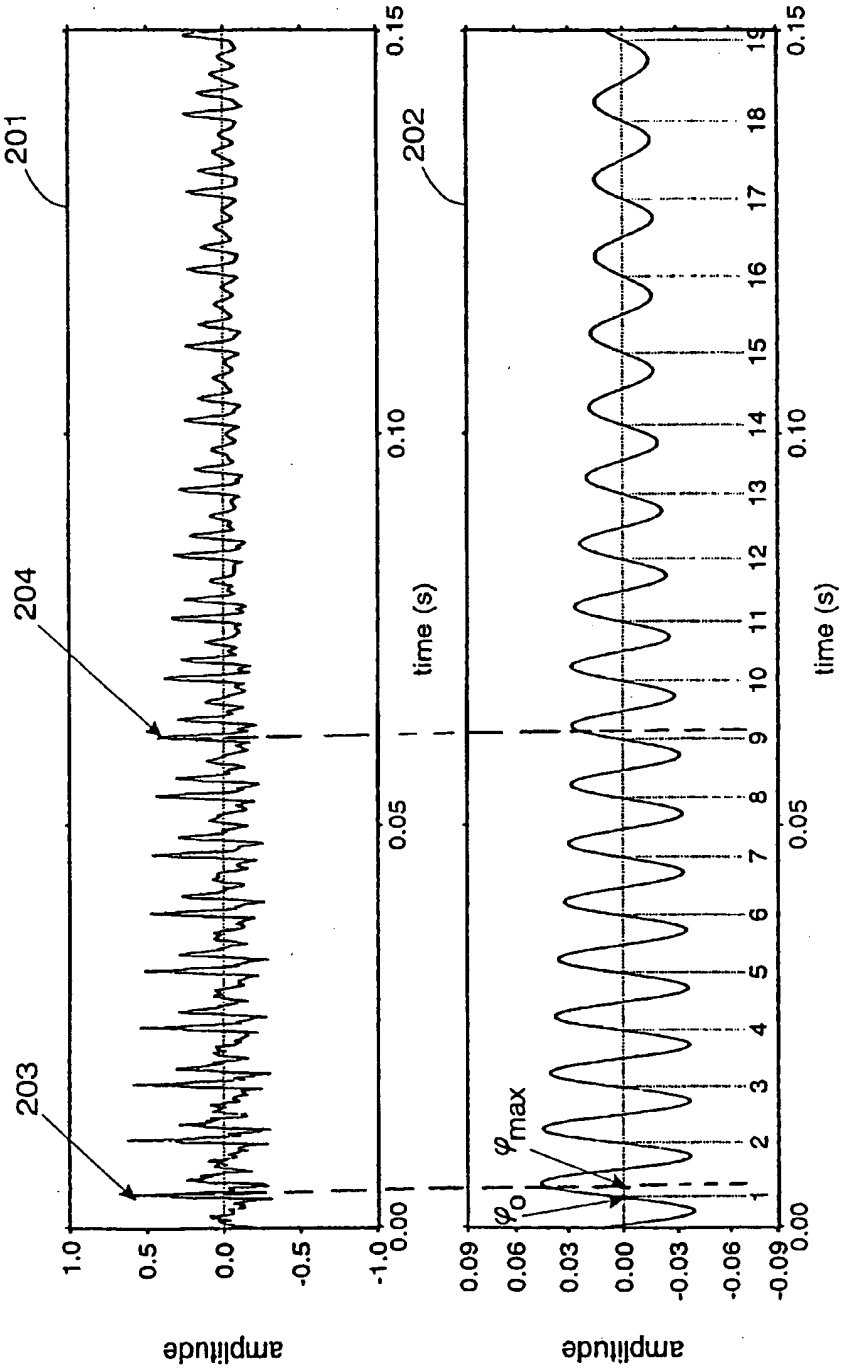
201
202
203
204
amplitude
time (s)
1.0
0.5
0.0
-0.5
-1.0
0.00
0.05
0.10
0.15
0.09
0.06
0.03
0.00
-0.03
-0.06
-0.09
φ_{max}
φ_o

FIG.2

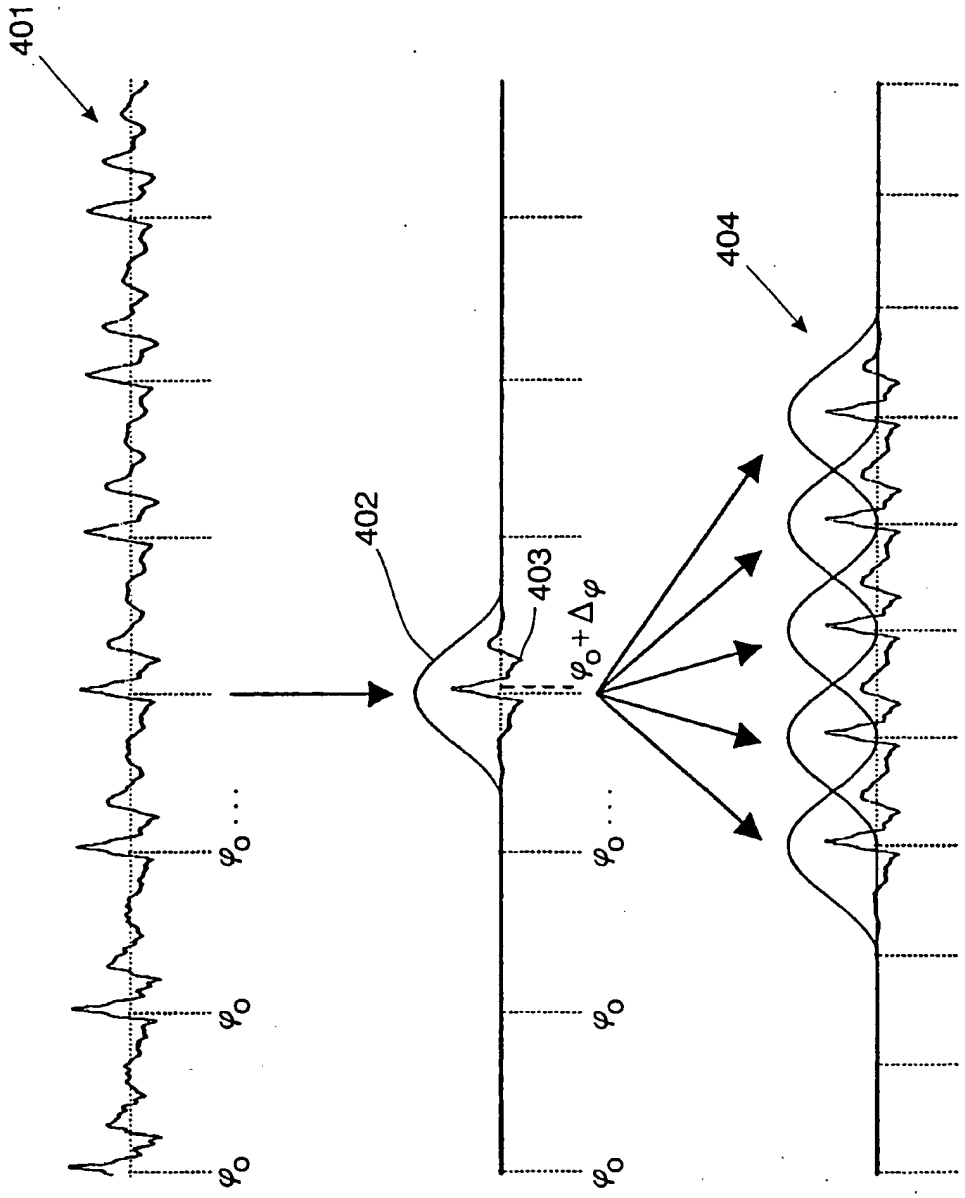
401
402
403
404
$\varphi_o + \Delta\varphi$
φ_o
φ_o
φ_o
φ_o
φ_o
φ_o

FIG.4

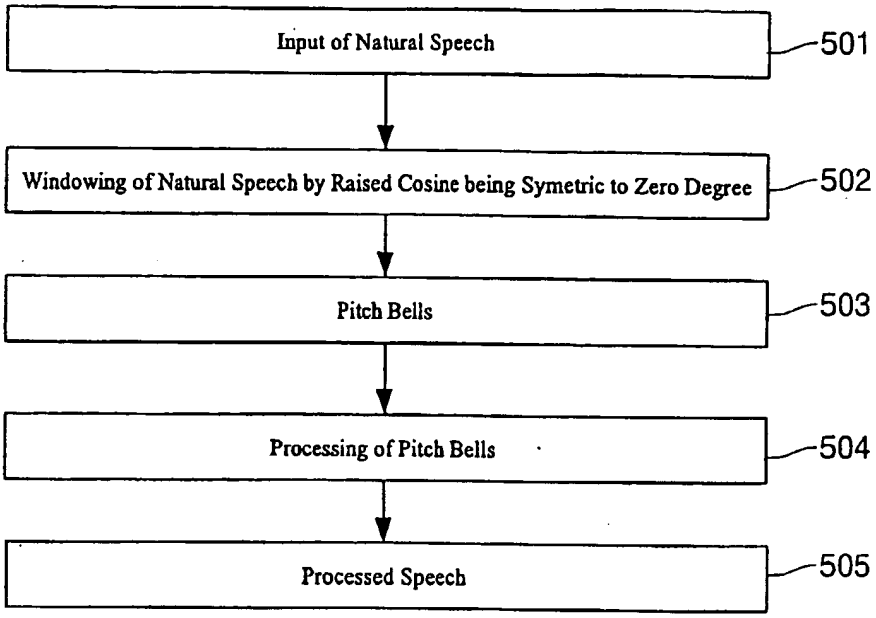
Input of Natural Speech
501
Windowing of Natural Speech by Raised Cosine being Symetric to Zero Degree
502
Pitch Bells
503
Processing of Pitch Bells
504
Processed Speech
505

FIG.5

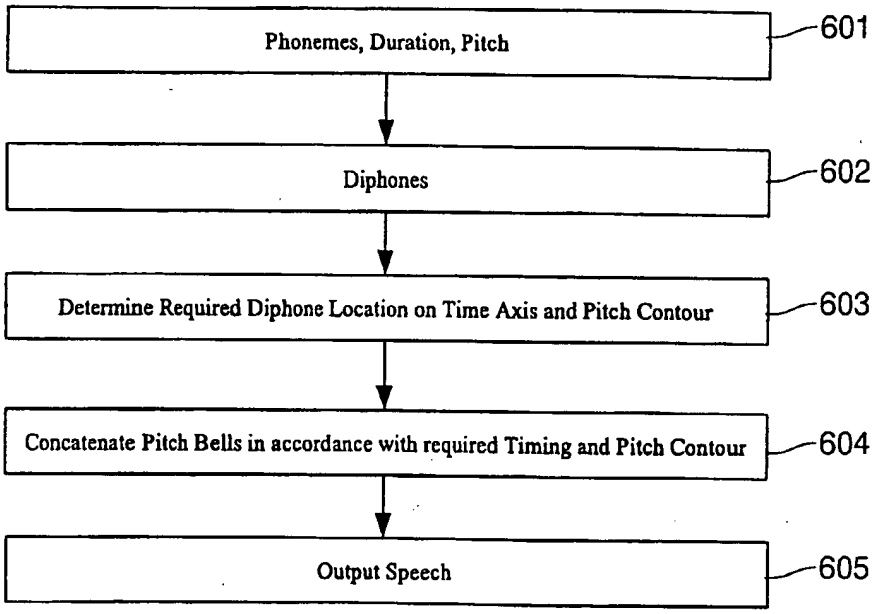
Phonemes, Duration, Pitch
601
Diphones
602
Determine Required Diphone Location on Time Axis and Pitch Contour
603
Concatenate Pitch Bells in accordance with required Timing and Pitch Contour
604
Output Speech
605

FIG.6

701	702	703
_	100	
h	55	(0, 111)
@	63	(20, 133)
l	64	
@U	128	(20, 139)
w	53	
=r	233	(20, 133) (80, 100)
l	87	
d	66	
_	300	(100, 83)

FIG.7

_,h	*(silence to 'h')*
h,@	*('h' to the schwa '@')*
@,l	*etc.*
l,@U	
@U,w	
w,=r	
=r,l	
l,d	
d,_	

FIG.8

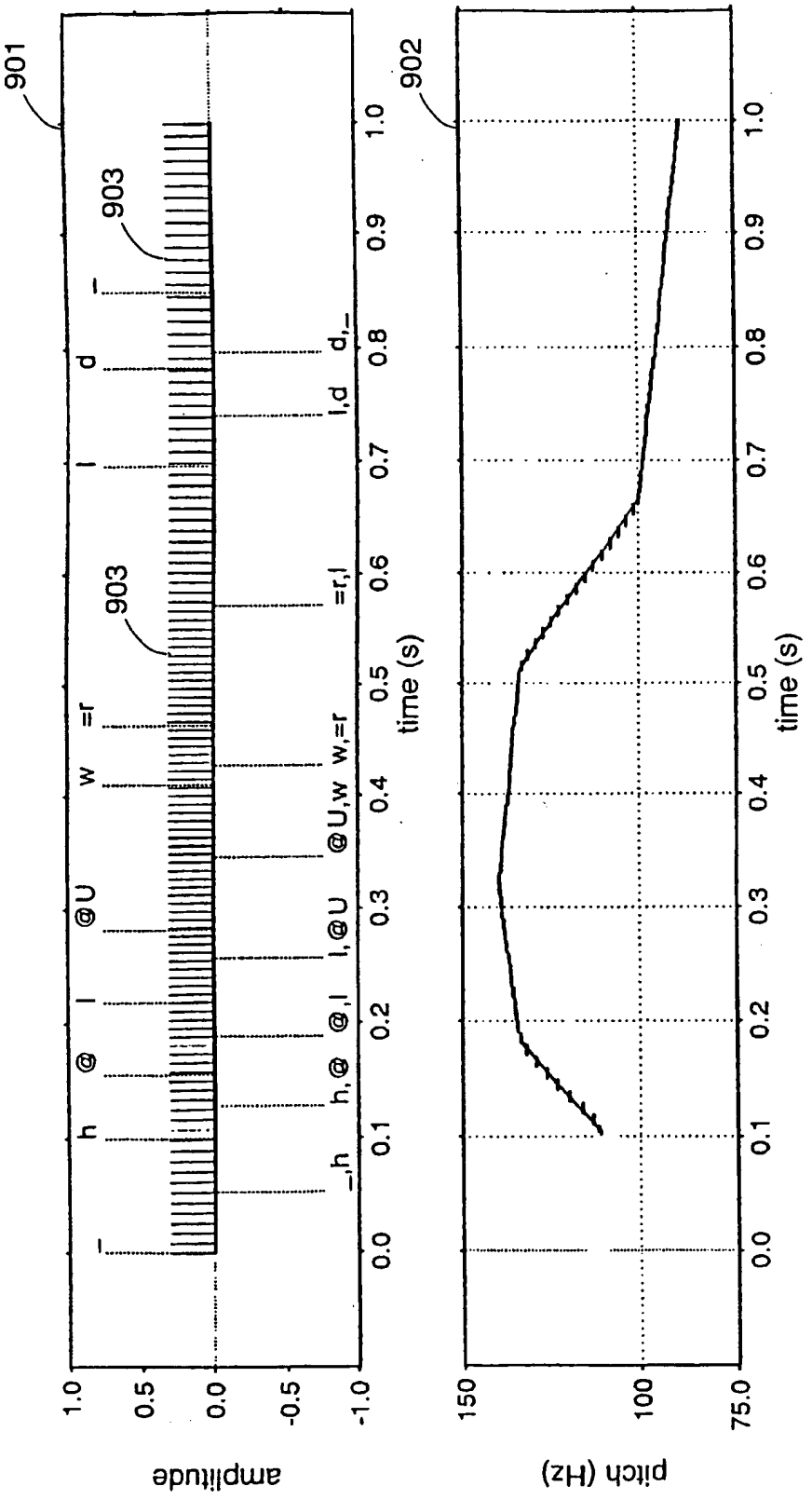
901
902
903
903
amplitude
pitch (Hz)
time (s)
time (s)
1.0
0.5
0.0
-0.5
-1.0
150
100
75.0
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0

FIG.9

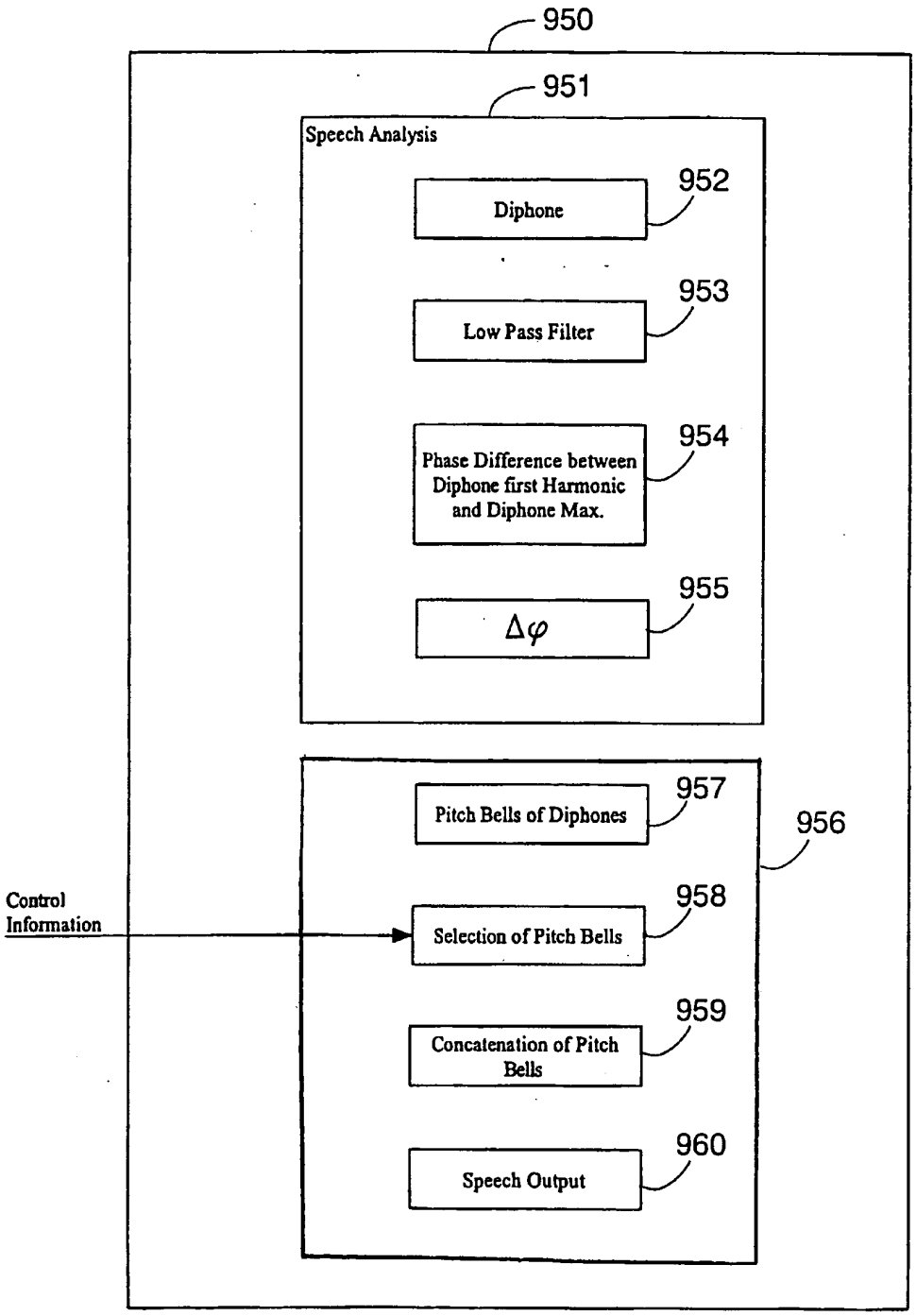
950
951
Speech Analysis
Diphone
952
Low Pass Filter
953
Phase Difference between Diphone first Harmonic and Diphone Max.
954
Δφ
955
Pitch Bells of Diphones
957
956
Control Information
Selection of Pitch Bells
958
Concatenation of Pitch Bells
959
Speech Output
960

FIG.10